Distributed by:

JAMECO® ELECTRONICS

www.Jameco.com ✦ 1-800-831-4242

The content and copyrights of the attached material are the property of its owner.

REVISION				
ECO NO.	**REV**	**DESCRIPTION**	**DATE**	**APPR.**
2016	**B**	**REVISE PER ECO**	**11/20/00**	**MJ**

Jameco Part Number 185800

1. SCOPE

2. CONNECTIONS

2.1 Input connector
2.2 Output connector
2.3 Pin assignments

3. ELECTRICAL REQUIREMENTS

3.1 Input

3.1.1 Input voltage
3.1.2 Input current
3.1.3 Input frequency
3.1.4 Inrush current
3.1.5 Efficiency

3.2 Output

3.2.1 Output power
3.2.2 Output voltage
3.2.3 Output current
3.2.4 Output regulation
3.2.5 Output ripple and noise voltage
3.2.6 Output transient response
3.2.7 Output voltage drift
3.2.8 Output overshoot
3.2.9 Output protection
3.2.10 Rise time
3.2.11 Turn-on delay
3.2.12 Output hold-up time
3.2.13 Temperature coefficient

4. ENVIRONMENTAL REQUIREMENTS

4.1 Temperature
4.2 Altitude
4.3 Humidity
4.4 Vibration
4.5 Input transient susceptibility
4.6 Harmonic Currents

5. SAFETY REQUIREMENTS

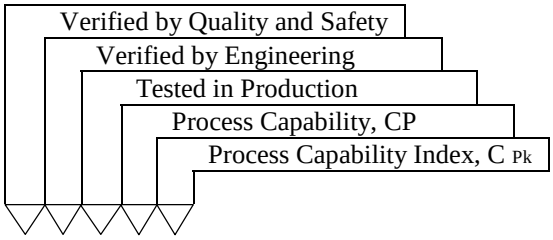
5.1 Dielectric withstand voltage
5.2 Insulation resistance
5.3 Leakage current
5.4 Safety spacing
5.5 Safety standards
5.6 Reliability
5.6.1 MTBF

6. EMI REQUIREMENTS

7. APPLICABLE DOCUMENTS

8. MECHANICAL

8.1 Weight
8.1.1 Board and Heatsink
8.2 Dimensions
8.2.1 Overall Dimensions



1. SCOPE

The purpose of this document is to specify the functional requirements of a 90W continuous, dual input (110/220 VAC with autorange), single output switching power supply in a open frame board mount package.

2. CONNECTIONS

The following will specify the input and output connections provided by the power supply.

2.1 INPUT CONNECTOR
Molex 3 position, 0.156 center header

2.2 OUTPUT CONNECTOR
Molex 12 position 0.156 center header

2.3 PIN ASSIGNMENTS

INPUT (J1)	OUTPUT (J2)	OUTPUT (J2)
Pin 1 - Neutral	Pins 1-4, +V1	
Pin 2 - Line	Pins 5-8, Gnd	

3. ELECTRICAL REQUIREMENTS

This section defines the electrical requirements for the power supply unit.

3.1	INPUT The operating conditions for the AC input are described in this section.
3.1.1	INPUT VOLTAGE The operating range is: 90-132 VAC/180-264 VAC, single phase.
3.1.2	INPUT CURRENT When the input voltage is 90VAC at 100 W, then the max input current shall be 2.5A.
3.1.3	INPUT FREQUENCY Input frequency range shall be 47 – 63 Hz.
3.1.4	INRUSH CURRENT Maximum inrush shall be 45A at 264VAC.
3.1.5	EFFICIENCY The efficiency of the power supply is 90% typical. Measured at 12V @ 7.5 Amps with 230 VAC input. Measurement is taken at PWB output connector pads at 25°C ambient with 5 minute warm up.
3.2	OUTPUT The operating conditions for the DC output are described in this section.
3.2.1	OUTPUT POWER The power supply will provide single output. The continuous output power is 90W.
3.2.2	OUTPUT VOLTAGE Initial setting tolerance is measured with 50% of maximum load on all outputs, with line voltage set at nominal. The voltage and initial setting tolerance of each output will be provided as follows:

OUTPUT	NOMINAL VOLTAGE	INITIAL SET TOLERANCE
V1	+12VDC	± 2 %

3.2.3	OUTPUT CURRENT Total output power not to exceed 90W free air convection. Rating of output currents are

listed as follows:

OUTPUT	MIN. OUTPUT CURRENT	MAX. OUTPUT CURRENT
V1	1A	7.5A

3.2.4 OUTPUT REGULATION

3.2.4.1 LINE REGULATION
Measured by varying the line voltage from 90 - 132VAC/180 - 264VAC.

OUTPUT	TOLERANCE
V1	0.3%

3.2.4.2 LOAD REGULATION
Measured by varying the load current from MIN to MAX load at nominal AC input voltage. All other outputs set to 20% of full load. Measured at motherboard, 500 ms settling time.

OUTPUT	TOLERANCE
V1	± 2.5 %

3.2.5 OUTPUT RIPPLE AND NOISE VOLTAGE
The maximum allowable ripple and noise are as follows, measured at 70 % load on all outputs: (5 minute warm up with 47uf bypass at measurement point.)

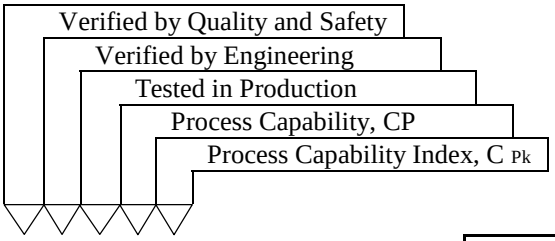
OUTPUT	MV
V1	350

3.2.6 OUTPUT TRANSIENT RESPONSE
The load current of measured output is changed from 50% to 100%. The recovery time is measured when the output voltage has recovered to within 1% of the load regulation band. All untested outputs are at 50% load, with nominal line voltage.

OUTPUT	RECOVERY TIME	MAXIMUM EXCURSION
V1	1 ms	10%

3.2.7 OUTPUT VOLTAGE DRIFT
Long-term output voltage drift over 1000 hours of the V1 output operation is typically 1.0%.

3.2.8 OUTPUT OVERSHOOT
The overshoot voltage as a percentage of nominal output voltage at start-up is as follows: I OUT = 4.2 Amps, measured on V1 only.



OUTPUT	OVERSHOOT
V1	15%

						3.2.9	OUTPUT PROTECTION The power supply will be provided with protection against any fault condition described below and will self-recover with a maximum restart of 6 seconds after the fault condition is removed.
						3.2.9.1	OUTPUT SHORT CIRCUIT The power supply will be protected against output short circuit. RMS short circuit shall be less than 0.5 A RMS under all conditions. Output voltage of less than 0.5V constitutes a short.
						3.2.10	RISE TIME The rise time from 10% to 90% of output voltage is a maximum of:

OUTPUT	RISE TIME
V1	50 mS

						3.2.11	TURN-ON DELAY The turn-on delay time of the main output after AC power is applied from a cold condition is 5.0 seconds MAX at 115 VAC.
						3.2.12	OUTPUT HOLD-UP TIME The power supply shall maintain the output within voltage/current specifications after loss of input power for 10 milliseconds typically at full rated load and at nominal AC input voltage (115VAC). Measured at minimum V set point (4.75V)
						3.2.13	TEMPERATURE COEFFICIENT Temperature coefficient over entire operating temperature range of 0ºC to 40ºC after one-hour warm-up will be as follows, measured on V1 only:

OUTPUT	COEFFICIENT
V1	2.4mV/°C

4. ENVIRONMENTAL REQUIREMENTS

						4.1	TEMPERATURE Operating temperature range: 0ºC to 50ºC at the full rated output power. Non-operating temperature range: -40ºC to +85ºC.
						4.2	ALTITUDE Maximum operating altitude: 10,000 feet. Maximum Non-operating altitude: 40,000 feet.
						4.3	HUMIDITY Non-condensing relative humidity range: 5% to 95%.
						4.4	VIBRATION 3 orthogonal axes, random vibration 10 min. test, 2.4 GRMS, 5Hz-500Hz.
						4.5	INPUT TRANSIENT SUSCEPTIBILITY The unit shall comply to the requirements of IEC 1000-4-2, 1000-4-3 and IEC 1000-4-4.
						4.6	HARMONIC CURRENTS The power supply meets the harmonic current limit requirements for Class A equipment.

5. SAFETY REQUIREMENTS

						5.1	DIELECTRIC WITHSTAND VOLTAGE Minimum dielectric withstand voltage: Input to output - 2121VDC / minute.
						5.2	INSULATION RESISTANCE Minimum insulation resistance: Input to output - 7 mega ohm.

Verified by Quality and Safety
Verified by Engineering
Tested in Production
Process Capability, CP
Process Capability Index, C_{Pk}

						5.3	LEAKAGE CURRENT Leakage current from line to ground shall be less than 3.5 mA.
						5.4	SAFETY SPACINGS The PCB spacing will comply with all working creepage and clearance requirement per 5.5 (The safety standard).
						5.5	SAFETY STANDARDS The power supply will meet Class 1, SELV of the following safety agency requirements: IEC 950, EN60950, with the following deviations: VDE. UL 1950 (Recognized Component) C-UL (Canadian Approval by UL)
						5.6	RELIABILITY
						5.6.1	MTBF @ 25ºC shall be 200,000 hours minimum.

6. EMI REQUIREMENTS

The power supply shall comply to the limits CISPR 55022 and CISPR 55014, Level B (at 230 VAC and 115 VAC). FCC 47 CFR Part 15, Level B (115 VAC)

7. APPLICABLE DOCUMENTS

Audit Test Program
Production 1 Test Program
Production 2 Test Program
QC Test Program
Top Assembly: V100-1001/01

8. MECHANICAL

8.1 WEIGHT
8.1.1 Board and Heatsink: 10oz.
8.2 DIMENSIONS
8.2.1 The overall dimensions shall not exceed 5.00" X 3.00" X 1.02 max height.

Verified by Quality and Safety

Verified by Engineering